because: 1st. The process in this state, when the individual is young and healthy, tends to spontaneously cure. Evacuation of the pus, and partial resection, may hasten the cure. 2d. Generalization or metastasis of the disease, when the case is treated by massage, is the more to be feared, for it is observed when the parts are allowed to remain quiet. The results of resection are not so unsatisfactory, especially in the light of the improvement in the technique in the operation by the ulnar incision introduced by Kocher, which does not interfere with the radial epiphysis. It is natural that in young, healthy individuals, a more conservative treatment should be adopted than in older persons, in whom the prognosis in tuberculosis of the joints is less favorable.—J. W. W.]

OTOLOGY.

UNDER THE CHARGE OF

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INJURY TO THE EAR FROM A PIECE OF WOOD.

DR. F. L. JACK gives the history of a little boy, five years old, who while at play fell, and in some unknown way ran a splinter of wood, the size of half a match, into his auditory canal and through the membrana flaccida. The accident happened three months before the boy was seen by Dr. Jack. Pain and otorrhœa had continued ever since, and since five weeks after the accident, pus had flowed from a spontaneous opening at the tip of the mastoid. A few days later facial paralysis was noted. Under ether a foreign body was detected by the probe, and it was pulled out with a hook. The otorrhœa soon ceased, as did the purulent discharge from the mastoid. The membrana tympani appeared cicatrized. Hearing for watch twenty inches. There had been great impairment of hearing. Dr. Walton reported "pretty nearly complete facial paralysis with degeneration-reaction." (*Boston Medical and Surgical Journal*, vol. cxxiv., No. 21.)

A CASE OF ABSCESS AND SOFTENING OF THE BRAIN, ASSOCIATED WITH CHRONIC DISEASE OF THE TYMPANUM.

DR. J. ORNE GREEN gives an account of a case of the above diseases, occurring in a woman thirty years old (*Boston Medical and Surgical Journal*, vol. cxxiv., No. 21). Six or seven years previously the woman had received a blow behind the right ear, followed within a week by discharge from the ear. Since then she had had occasional pain, with renewed discharge, lasting for a week or two and then ceasing for some months. For five years, in rising suddenly, and in going down stairs, has been dizzy, followed occasionally by vomiting.

The autopsy revealed an abscess about the size of an English walnut in the right temporo-sphenoidal lobe, its outer wall of brain-substance being only one-eighth of an inch thick. She had had pain over the right side of head, over region of this abscess. There was no sign of transmission of purulent disease from the drum-cavity to the brain.

Dr. Green says that in this case localized pain would have been a good guide for opening the brain abscess. He calls attention to Körner's statistics regarding this symptom. After an analysis of one hundred cases of otitic brain abscesses, he says, in speaking of pain, that it is of little value for localization. Of twenty-one cases of cerebellar abscess, in eight only was pain referred to the occiput, while in three the pain was referred to the forehead; and in five cerebral abscesses the pain was referred entirely to the occiput.

SOME POINTS CONCERNING THE OPENING OF THE MASTOID PROCESS.

DR. THOMAS HEIMAN, of Warsaw, enumerates the accepted indications for opening the mastoid, and makes some additions to them (*Archives of Otology*, vol. xx. pp. 132–141). The indications are as follows:

1. In acute purulent otitis media, complicated with inflammation of the mastoid process, when the inflammatory symptoms, like the swelling of the skin, the fever, the persistent and severe pain, do not yield to antiphlogistic treatment (ice, leeches), and Wilde's incision.

2. In acute and chronic purulent otitis media, when the escape of the secretion is impeded by granulations in the middle ear or stenosis of the external auditory canal, causing recurrent swelling, redness, painfulness of the skin of the mastoid process; or, in the absence of these objective symptoms, when there is suspicion of inflammation of the mastoid process.

3. When the mastoid process is apparently healthy, but the removal of pus or cholesteatomatous masses through natural channels is impossible, and symptoms dangerous to life manifest themselves.

4. In congestive abscesses and fistulæ in the region of the mastoid process; to which Heiman adds, "when this cannot be cured within a certain time, and the general condition is satisfactory, and the patient is free from any dyscrasia."

5. In persistent, cutaneous pain in the mastoid process, yielding to no other treatment, though there is no retention of pus and the mastoid seems healthy; especially, however, when it seems sensitive to pressure. To which the author adds, "and also in the absence of pain in the mastoid process, and in free discharge of the secretion, when in acute and chronic otitis media there is continuous though not high fever, which does not yield after some time to local or general treatment."

6. As a prophylactic operation in symptoms of retention of secretion and inflammation of the mastoid process, when death is to be feared on account of imperfect disinfection.

To these Dr. Heiman adds two new indications, viz.:

7. In acute purulent otitis media in which there is no inflammation of the mastoid process and no retention of secretion, but in which the discharge is very profuse, does not yield to the usual methods of treatment after a certain

time, two to three weeks, or even increases, especially however, when fever supervenes.

8. When there are distinct symptoms of inflammation of the brain and the meninges, although in such cases the chances of success are very doubtful.

These conclusions are based on sixty-seven operations on the mastoid performed by Heiman.

[We are surprised to find *prolapse of the posterior inner and upper wall of the auditory canal* not mentioned as one of the most pathognomonic signs of intra-mastoid inflammation and suppuration. Indication No. 7 should be weighed most carefully even by the expert. As the author says, "especially cases coming under this indication recover without an operation."—ED.]

CEREBRAL LESIONS DUE TO CHRONIC PURULENT OTITIS MEDIA.

DR. POULSON, of Copenhagen, having examined the notes of autopsies in the public hospital of Copenhagen for the years 1870 to 1889 inclusive, found in 10,159 cases, 28 in which death was attributed to an intra-cranial affection due to chronic purulent otitis media (*Nordiskt medicinskt Archiv*, vol. xxiii., No. 14). There were twelve cases of cerebral abscess, eight in the temporal lobe, seven adults and one child; three in the cerebellum, all adults. One case presented abscess in the cerebellum and in the occipital lobe (a child). Two of the temporal abscesses were opened by trepanation of the cranium. One case recovered entirely; the other died of diffuse meningitis. Not much diagnostic significance is attached to the fever in such cases; it is not great in uncomplicated cases of abscess in the brain. Among symptoms of compression of the brain, the slowness of the pulse is important, but not pathognomonic. Cerebral abscess often has a very chronic development. Sometimes the only symptoms are the final ones—somnolence and coma. Among the symptoms of temporal abscess is sensory aphasia. Troubles in speech may also occur in abscess on the left side. Hemiplegia may occur on side of body opposite to affected ear. This was observed in five of the cases reported. In all the cases narrated by Poulson a sinus-thrombosis furnished the link between the otitis and the cerebral abscess.

Trepanation furnishes, of course, the only means of opening the abscess. The author relates a case of a woman, thirty-two years old, affected with chronic purulent otitis, right side. Patient began to suffer from headache and vomiting. The mastoid was resected, but all the symptoms persisted and prostration increased. The cranium was trephined fifteen millimetres above the auditory meatus and an epidural abscess was evacuated. The patient remaining, however, in a sleeping condition, and paralysis presenting itself on the left side in the face, arms, and legs, the dura mater was then opened, and a considerable quantity of pus escaped from the temporal lobe. The cavity of the abscess was then drained, and the patient recovered entirely.

Nine cases of sinus thrombosis are given—one of the superior and inferior petrosal sinus, the others of the lateral sinus. Some of these cases offered no special symptoms, while others manifested marked pyæmic symptoms. The author is disposed to be satisfied with opening the sinus without resorting to ligation of the internal jugular vein.

The author then reviews the various cerebral symptoms in such cases, and advocates an explorative trepanation of the cranium, when retention of pus in the tympanic cavity or mastoid cells can be excluded. Also, when the diagnosis between sinus-thrombosis and cerebral abscess is uncertain, the author advises first opening the lateral sinus, and then, if the examination is negative, to proceed at once to expose the temporal lobe.

CHRONIC PURULENT INFLAMMATION OF THE MIDDLE EAR, WITH PERFORATION OF SHRAPNELL'S MEMBRANE (MEMBRANA FLACCIDA).

In this article PROF. GRUBER, of Vienna, considers the very important point of "how these purulent inflammations should be treated" (*Medical Press*, London, No. 2713). "As a general rule, surgical interference has to be resorted to. . . . A second incision or enlargement of the primary perforation may have to be performed. Where greater destruction has taken place, a more heroic operation may be required, as when caries is present the small bones and part of the temporal bone may have to be removed." If the more heroic operation is unnecessary, Gruber "begins treatment by carefully disinfecting the whole ear by a solution of common salt, and after all foreign matter has been removed, rinsing the whole with sublimate solution, 1 to 1000." If the perforation is to be enlarged, the galvano-caustic is preferred as being more suitable for treatment and destruction of infectious germs which may be present. Granulations may be scooped out. After all septic matter is removed and hemorrhage checked, we are advised to pack the cleaned attic space with iodoform or sublimate gauze tampons, and to close the outer ear by the same substance. These tampons may be left in position "for a few days, unless untoward symptoms appear, such as pain, fever, etc., or where the discharge or secretions are still abundant." "If the case proceed favorably, with very little secretion, five or eight days should elapse before any removal of the dressing. . . . As soon as the inflammatory secretion has ceased, tamponing should cease also, but a tampon should be laid outside as a protection." One case is given as cured in one month by this treatment.

AFTER-TREATMENT OF MASTOID PERFORATION.

F. KRETSCHMANN, of Magdeburg, maintains that the final result of the artificial opening of the mastoid depends upon the after-treatment (*Sammlung klinischer Vorträge*, von Volkmann, No. 1, Heft 7, 1st series). Attention must be paid to two points, viz., the diet, and the condition of the wound most likely to check the purulent process.

The patient should remain in bed for a week. The food must be nutritious but plain. The bowels must be kept regular. Alcohol must be avoided, unless the heart is weak or the patient a regular drinker. Physical efforts and mental excitement must be avoided. Local treatment varies according to whether we are dealing with an acute or a chronic process. While in the former the chief aim need be only to remove all diseased matter, it not being important to have opened the antrum, in the chronic cases the middle-ear spaces must be thoroughly washed out, which demands an opening of the antrum, and that the opening thus gained be maintained for some time.

When the operation is done, the hemorrhage quelled, and the wound irrigated, shall the soft tissues be sutured? Schwartze, Jacoby, Politzer, and others suture the upper and lower angle of the wound, allowing only in the middle of the wound an opening for the introduction of a drainage-tube or a tampon. Suturing the wound is, of course, indicated when a rapid closure is desired, but in cases of chronic purulency treatment of the wound without sutures is desirable. The latter prevents retention of secretions and burrowing; it permits an accurate view of the wound and any treatment of the wound-canal which may be demanded. It also does away with the necessity of using the leaden peg and allows a generous tamponading of the wound. Tampons are preferable to drainage-tubes because they check bleeding and prevent secondary hemorrhage, they are antiseptic, prevent subsequent infection of the wound, and stimulate granulations. The antiseptic material in the tampon is of secondary consideration. Iodoform is very popular. The tampon method is especially serviceable in acute caries of the mastoid, in which intense œdema of the soft parts interferes with suturing, where the softened bone must be removed extensively, and where perhaps the sinus transversus or the dura mater has been exposed.

Many surgeons renew the dressings every day. In the Berlin clinic, as a rule, they are allowed to remain unchanged forty-eight hours, while in Vienna, Politzer and Gruber do not change them for four days, unless febrile symptoms render an earlier change necessary. If there is no fœtid otorrhœa, the dressings may remain unchanged for four, six, or even more days. It is sufficient if the ear is cleansed much sooner. When the dressings cling, they should not be forcibly removed. Of course, this long-continued dressing cannot be allowed when fever sets in. The later dressings must be changed oftener, as the secretions from the increasing granulation tissue will become greater in quantity and tend to irritate the skin adjacent to the wound.

The fluids used in irrigation of the wound-tract should be corrosive sublimate from ½ to 1 per cent., carbolic acid 1 to 2 per cent., and boric acid 4 per cent. If these cannot be used or are unsatisfactory, a physiological solution of chloride of sodium will answer. After this some iodoform may be lightly dusted over the wound. The mechanical effect of syringing is worthy of great consideration. When this, conducted through the mastoid wound and through the auditory canal, fails to bring away retained secretions, syringing through the Eustachian tube will often bring away thick masses of secretion.

Kretschmann believes that, as a rule, no form of peg is required to keep the wound open. He prefers, with Stacke, the tampons for this purpose. He uses the peg or stopper only in those cases in which the after-treatment must be left to some extent to the patients.

Forcible injections are open to the objection that they may send purulent matter further into the tissues instead of washing them out (von Bergmann). They also produce headache, vertigo, and fainting, or even worse accidents. Any obstruction in the wound-canal can be overcome by using a delicate probe. If this fails, then the granulations may be overcome by inserting into the canal a probe tipped with nitrate of silver. Immediately afterward the leaden pin must not be inserted, for fear of metallic precipitation. Better than cauterization is the use of a sharp spoon under cocaine. Forcible reintroduction of the leaden pin should be avoided, as it causes not only pain and vertigo, but nearly always inflammatory reaction in the tract of the wound, with febrile symptoms. Gradually in the course of some weeks the wound-canal shows signs of permanency, and the skin tends to sink inward at its outer end and form a cicatrized cutaneous mouth. During this attention to the maintenance of a permanent canal through the mastoid, most careful attention must be paid to the condition of the tympanic cavity. The irrigation must take place through the antrum and from the external auditory canal. The wound-opening in the mastoid may be allowed to heal when the suppuration ceases. Schwartze claims that a cure is effected when the antiseptic gauze in the auditory canal and leaden peg in the mastoid opening are entirely odorless and dry when removed after twenty-four hours' contact with the tract of the operation, and also when the fluid injected into the Eustachian tube comes out clear and free from particles of bone. The good effects of the operation will be destroyed by allowing the wound to close too soon. If no communication with the antrum had been established at first, the wound need not be kept open longer than two or three weeks. Even this may be followed by surprising cure in many cases of chronic suppuration. In any case a permanent fistula in the mastoid is no disadvantage.

BONY GROWTHS IN THE MEATUS AUDITORIUS, AND THEIR REMOVAL.

URBAN PRITCHARD, of London, accepting the late Dr. Cassell's (Glasgow) broad classification of bony growths in the auditory canal, hyperostoses and exostoses, proceeds to consider their growth under a further subdivision, and presents his own methods of removal (*Archives of Otology*, vol. xx., No. 1). Hyperostoses are not so dense as exostoses, and the removal of the former is not much harder than that of ordinary bone-tissue.

Exostoses are divisible into:

1. Multiple: uniformly smooth and rounded; pale and glistening on the surface, even denser than ivory in consistence. Etiology of these growths, according to Pritchard, is largely gouty or rheumatic. It is admitted that frequent bathing acts as an exciting cause. They vary in size from that of a millet-seed to that of a split-pea. Their growth is slow.

2. Multiple: irregular in shape; of a pale pinkish hue and dull appearance, with broad bases, and of great density. Their origin can be traced generally to the irritative action of a long-continued otorrhœa; or even to the actual ossification of polypi. They grow slowly, but yet more rapidly than the first class, especially if the otorrhœa remains unchecked. Hence they may be met completely occluding the meatus, "a condition of obvious gravity."

3. "Single polypoid exostoses, consisting of a nucleus, so to speak, of ivory-like consistence, from the surface of which trabeculæ of cancellated bone project into a layer of fibrous tissue, the whole being attached to the outer edge of the osseous meatus by a pedicle." These are probably due to ossification of a fibrous or fibro-cartilaginous tumor. They are rare, but tend to comparatively rapid growth.

Exostoses of the first and second class are usually very tender to the touch of the probe, while the surface of those of the third class is not very soft and yielding, but almost insensitive. The first and second varieties may occur on the walls of the middle ear, where they may produce irremediable deafness, if they attain much size.

Treatment consists in operation. The question to decide is *when* surgical interference should be undertaken, and also *how* it can best be carried out.

Hyperostoses should, as a rule, be removed at once. Exostoses of the first variety, as a rule, should be let alone unless they show a decided tendency to completely block the canal, when they should be operated upon. An exception, respecting operation, may be made in favor of those cases in which one of the growths is much larger than the other, as there is a danger of more rapid closure of the canal. These may be removed early, especially if they are situated near the osseous meatus.

In the second variety, as in the first, surgical interference is advisable under similar conditions. Another reason for early removal of these growths is the frequent presence of otorrhœa, which not only tends to promote rapid growth of the exostoses, but which may be impeded in its escape from the ear by the presence of these growths in the canal. It should be remembered also that the otorrhœa indicates the probable existence of carious bone behind the exostosis, when an operation may be considered almost imperative. Exostoses of the third variety should be removed at once.

Methods of removal. The chisel and hammer are considered as applicable to hyperostoses. Exostoses of the third variety, pedicellate bodies, may be removed by a dental elevator, or by a dental stump-forceps.

The first and second varieties of exostoses may be removed by the modified dental drill or burr, worked by the electro-motors (Dalby), or by the dental engine.

Instead of solid burrs, Pritchard has used lately a minute trephine, without central peg or tooth, averaging about five millimetres in diameter. The advantages of the trephine over the burr or drill seem to be:

1. As a rule only one sitting is necessary.
2. There is much less trouble from the slipping or running of the instrument on the surface of the growth, as it gets a better hold in the bone, and even if it does slip there is less risk to the meatus, as the trephine, unlike the burr, is smooth on the outside.
3. No delay is caused by the change of instruments; the same trephine will last throughout.
4. There is less filing the growth and converting it into débris with the trephine than with a drill; therefore less need for removing and reapplying the instrument.
5. For the same reason there is less blood, and therefore less obstruction to the view.

The author's operations have been performed upon the anæsthetized patient, in order to save pain and keep the patient still.

TENOTOMY OF THE TENSOR TYMPANI.

Hyrtl and Von Troltsch suggested tenotomy of the tensor tympani, and Weber-Liel was the first to perform it. **KESSEL** has recently revived the operation, and gives the following indications as guides (*Archiv f. Ohrenheilkunde*, Bd. xxxi.):

1. In paralysis of the stapedius muscle, with undisturbed function of the tensor tympani muscle.
2. In tonic spasm of the tensor tympani muscle.
3. In cases of perforation of the membrana tympani in the region of the pyramid of light; kidney- and heart-shaped perforations.
4. In hypertrophic catarrhs.

In the fourth condition the results are good if the stapes is still movable in the oval window. If the stapes is fixed in the oval window no good result can be obtained by the operation.

Before the operation the auditory canal is disinfected, and anæsthesia is produced by a 30 per cent. solution of cocaine.

SUGGESTIONS REGARDING INTRA-NASAL PRESSURE.

In the paper by DR. A. A. BLISS, of Philadelphia (*University Medical Magazine*, 1891), there are so many points of natural interest to the aurist that we note with pleasure some of the statements and suggestions contained in it. The condition producing intra-nasal pressure is that resulting from the contact, at one or more points, of surfaces which normally should be separated by an unobstructed space. The various symptoms may be summarized as follows: "Excessive muco-purulent discharge from the post-nasal space into the pharynx; pain within the nose, with excessive serous or mucous discharge and sneezing; occlusion of the nares; supra-orbital pain, associated not infrequently with pain at the vertex, occiput, and back of neck; a feeling of discomfort in the eyes, sometimes with lachrymation; cough, often associated with hyperæmia of the vocal cords, but frequently without this condition; infra-orbital pain; pain in the ears due to middle-ear catarrh or tubal catarrh (Eustachian); pain in the ears without visible signs of inflammation; hyperæmia of the fauces; huskiness of the voice, with imperfect action of the adducting muscles; dysphagia; sensations as of foreign substances in the throat; oppression over chest; palpitation of the heart; asthma."

The author recommends that "adenoids" from the post-nasal space be removed with the patient under ether, and the instruments considered the handiest by him are "fine curettes or the crocodile forceps, introduced through the nares, their action being assisted and regulated by the forefinger of the operator's other hand, introduced into the post-nasal space through the mouth."

TRAUMATIC OCCLUSION OF THE EXTERNAL AUDITORY MEATUS.

DR. MATTHIAS L. FOSTER describes a case of the above-named affection in which pressure maintained upon the newly formed diaphragm secured reduction of tissue and improved hearing (*New York Medical Journal*, 1891). The patient, a boy of eleven years, was injured by a heavy box which fell upon him. Three months after this injury he was sent to the Manhattan Eye and Ear Hospital on account of closure of the meatus of the right ear. After some search a very small opening was found in the superior posterior quadrant of the neoplastic diaphragm which led into a more enlarged cavity. This opening was slightly dilated with a Weber lachrymal probe, and a piece of India-rubber drainage-tube was introduced into the opening and allowed to remain there a few days, after which it was found the opening had become large enough to admit the introduction of a larger tube, and in less than two weeks he could wear a tube of much larger size, and the hearing greatly improved—how much we are not informed. Absorption of such neoplastic tissue in the auditory meatus is preferable in most cases to its excision, as shown in this case. For five months the rubber tube was worn. Finally, a silver tube was inserted, which, it is proposed, shall be worn for a year or two.

OBSTETRICS.

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APPENDICITIS OCCURRING DURING PREGNANCY.

In the *Boston Medical and Surgical Journal*, 1891, No. 27, a case of pregnancy complicated by appendicitis is reported by MIXTER. The patient was prematurely delivered at seven months with a dead fœtus, following an attack of abdominal pain and tenderness, with fever. These symptoms persisted after her delivery, and an ill-defined tumor could be seen extending from the ilium to the ribs. When the abdomen was opened, an inflammatory mass caused by appendicitis was found, and in the mass were found two hard fecal concretions. The appendix was discovered at the lower end of the kidney; it was removed, and the abdominal cavity tamponed with iodoform gauze. Recovery ensued.

THE USE OF THE BALLOON DILATOR OF TARNIER IN DELAYED LABOR.

BONNAIRE (*Archives de Tocologie*, 1891, No. 12) concludes the report of forty-eight cases in the Paris Maternity in which Tarnier's dilator was used to accelerate labor. The principle of this instrument is similar to that of Barnes's dilators. It is larger, however, than they, and is intended to be left, after it has been introduced and filled, within the uterus to be expelled with the child. The indications for the use of this instrument are delay in labor necessitating active dilatation, and the induction of labor. It is contraindicated when a fibroid tumor is present, cancer, abnormal insertion of the placenta, albuminuria with symptoms of eclampsia, and cases where it is essential to preserve the bag of waters as long as possible.